

$$S^{(k)} = s^{(k)}$$



the Allies' sample of
captured German tanks

$$(S^{(k)} = s^{(k)}) \cap (N = n)$$



Germany's tank
population

$$N = n$$

two statements of conditional probability:

$$\pi(N = n \mid S^{(k)} = s^{(k)}) = \frac{\pi[(S^{(k)} = s^{(k)}) \cap (N = n)]}{\pi(S^{(k)} = s^{(k)})}$$

$$\pi(S^{(k)} = s^{(k)} \mid N = n) = \frac{\pi[(S^{(k)} = s^{(k)}) \cap (N = n)]}{\pi(N = n)}$$



Bayes' theorem

$$\pi(N = n \mid S^{(k)} = s^{(k)}) = \frac{\pi(S^{(k)} = s^{(k)} \mid N = n) \pi(N = n)}{\pi(S^{(k)} = s^{(k)})}$$

posterior likelihood prior evidence